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ABSTRACT

A series of 18 fact sheets provide basic information on specific subjects of interest to those working with gifted and talented children. The fact sheets, produced by the Council for Exceptional Children, are in question/answer format and have resource references. Following are the topics of the fact sheets: career awareness for the gifted and talented, the culturally diverse gifted and talented child, developing programs for the gifted and talented, characteristics of the gifted and talented, curriculum for the gifted and talented, evaluation of programs for the gifted and talented, finding funds for gifted programs, forming a local association for gifted and talented education, parents of gifted and talented children, the preschool gifted and talented child, the gifted and talented handicapped, developing individualized programs (IEPs) for the gifted and talented, identification of the gifted and talented, math and science for the gifted and talented child, reading for the gifted and talented, what is creativity, developing a community based mentorship program for the gifted and talented, and creative thinking techniques. (PHR)

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FACT SHEETS ON THE GIFTED AND TALENTED

1978

Sponsored by The Office of Gifted and Talented
Office of Education
Department of Health, Education
and Welfare

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To meet the increasing demand for information about the gifted and talented, the Council for Exceptional Children has produced 18 fact sheets for the Office of Gifted and Talented, Department of Health, Education, and Welfare. The fact sheets are designed to present basic information on specific subjects following a question/answer format.

The entire series has been compiled as a single document for convenient entry into ERIC.

CAREER AWARENESS FOR THE GIFTED AND TALENTED

Produced for the Office of Gifted and Talented, US Office of Education, Department of Health, Education, and Welfare by The Council for Exceptional Children.

Career awareness, a component of career education, is a relatively new but increasingly strong emphasis in American education. More and more, teaching and learning is directed toward the acquisition of basic skills directly related to students' futures in the "world of work."

The specific relevance of career awareness for the gifted and talented student has been acknowledged by the federal government, which has stated that career education should be a priority for all students. Gifted and talented programing in career awareness is a means to increase the motivation and school performance of these students as well as to help bring their abilities into full use for the good of the students themselves and for that of society.

Career awareness in education may be described as those educational activities which are geared to building a bridge between school and work. The Career Awareness Division of the National Institute of Education outlines four major areas through which this goal may be accomplished:

- *Knowledge* which includes factual information about the job and self.
- *Values* which include the individual's reasons for judging the value of the routines, requirements, purposes, and rewards of work and values of self.
- *Preference* which relates to the feelings of attraction an individual may have for a particular career and preparing for it.
- *Self concept* which relates to an individual's perceptions of his or her specific abilities and capacities as they may be challenged and fulfilled by a particular career.

These areas are particularly relevant to programs for gifted and talented students, who are often able to learn and perform at levels of sophistication earlier and more fully than their peers. Recent studies of career education programs have found that gifted and talented students are able to learn highly sophisticated skills in computer science, statistics and probability, journalism, advertising, architecture, gerontology, and marine biology. While it is easy to see the application of scientific and mathematical skills to careers, the arts and humanities should not be overlooked since they are most often the sources for the values and perspectives which will guide not only career choice but also career performance as an adult.

In conducting career awareness through education, it is best to have professionals in the field serve as instructors and/or consultants. Although some classroom teachers may have training in the conduct of career awareness classes, the cooperation of several individuals and institutions from the business and labor community will lend credibility. The novelty of interaction with different career professionals also tends to make students more aware of the uniqueness of the program itself in comparison with regular parts of the curriculum.

Two of the greatest advantages of career awareness courses also contain the kernel of serious problems which must receive attention. First, a career awareness emphasis can often be important for economically and culturally isolated children, but it should present career alternatives not generally considered while at the same time indicating realistic channels through which these alternatives can be exercised. Second, in designing career awareness programs, precautions should be taken that sex role, race, and other stereotyping is eliminated. Often boys are encouraged in scientific and mathematical areas and girls are encouraged toward humanities and arts. These approaches, in addition to being sexist, can generate unnecessary conflicts for a child who possesses gifts or talents in an area outside the boundaries of the stereotype. Well planned career awareness programs can help break down stereotype barriers.

Career awareness programs should be designed primarily with the needs and interests of individuals in mind. Approaches which simply hand out information on a potpourri of careers should be avoided in favor of allowing individual students to pursue their interest in a career area. This interest may then be supplemented and enriched through interaction with a career professional who can answer questions and offer guidance. Career awareness program planners should also be aware of the educational possibilities offered to gifted and talented students by combining career awareness programs with community based mentorship approaches.

RESOURCES

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Prepared by Maryellen Cunnion, Project PRISM. Norton, Maryland.

The material in this fact sheet was prepared pursuant to Contract Number 300-76-0530 from the Office of Gifted and Talented, US Office of Education, Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the US Office of Education and no official endorsement by the US Office of Education should be inferred. (1/78)

THE CULTURALLY DIVERSE GIFTED AND TALENTED CHILD

Produced for the Office of Gifted and Talented, US Office of Education, Department of Health, Education, and Welfare by The Council for Exceptional Children.

The culturally diverse gifted and talented are generally those children from Black, American Indian, Mexican American, Asian American, and Puerto Rican populations. The designation "culturally diverse" is used because their behavior patterns and responses often vary from the typical indicators of giftedness and talent observed in the dominant culture, e.g., high IQ scores or proficiency in the dominant language. The term has also gained currency because previous designations implied the superiority of the dominant culture, and that differences are somehow deficits requiring remediation.

What are some problems in identifying gifts and talents among the culturally diverse?

- Often these children are overlooked in the identification process. While particular talents may be observable, their intellectual ability and potential may be neglected, obscured by a cultural veil, or dismissed. These children are often penalized when assessed by instruments normed on the dominant culture.

- We often mistakenly assume that culturally diverse children are alike; since they belong to an identifiable group, we assume they must all share the same characteristics. They should be seen as individuals.

- When the behavior of culturally diverse gifted and talented children is interpreted, their boredom with already learned or irrelevant material is often interpreted as antiintellectual. Dissatisfaction expressed as disruptive or impulsive behavior reinforces misperceptions. The desire to accept challenges may be seen as aggressive or unrealistic.

- Preoccupation with the ethnicity or social characteristics of the group from which the child comes may blind us to potential. Attention is diverted from the variation in ability among individuals (especially at the upper end of the performance scale) and the characteristics of low achievers are applied to the group as a whole, including its gifted and talented members.

How can culturally diverse gifted and talented children be identified?

In settings where the home and school environment is a barrio, ghetto, or reservation, and access to the dominant culture is restricted, specialized testing measures must be developed because the language, cultural norms, and content of the test may be beyond the experience of the testee. To compensate for these factors, potential may be assessed using one or more of the following resources.

- *Interpreting results from standardized measures.*
  - Meeker suggests relating IQ test responses to the various abilities set forth in Guilford's Structure of Intellect model to make these instruments more diagnostically useful for designing instructional strategies. Contact: Dr. Mary Meeker, SOI Institute, 214 Main Street, El Segundo CA 90245.
  - Bruch has suggested that traditional instruments (e.g. Binet, WISC-R) be scored to highlight specific strengths among culturally diverse groups. She has developed an abbreviated method of scoring the Binet which has been used to identify the strengths of Black school children. Contact: Dr. Catherine Bruch, Department of Educational Psychology, University of Georgia, Athens GA 30602.
  - Mercer's System of Multi-Cultural Pluralistic Assessment (SOMPA) provides a means to compare a culturally diverse child's performance with standard norms by a system of differential weightings of behaviors and performances. Contact Dr. Jane Mercer, Department of Sociology, University of California at Riverside, Riverside CA 92502.
- *Tests which may be used with the culturally diverse to identify particular gifts.** The following tests may be used with culturally diverse children who might be penalized by traditional formal methods.
  - Torrance Tests of Creative Thinking. Contact: Personnel Press, 191 Spring Street, Lexington MA 02173.

- Raven's Progressive Matrices Tests. Contact: Psychological Corp., 304 E. 45th Street, New York NY 10017.
- Arthur Point Scale of Performance. Available through Stoelting Company, 434 N. Holman Avenue, Chicago IL 60624.
- Leiter International Performance Scale. Available from Stoelting Company, 434 N. Holman Avenue, Chicago IL 60624.
- Test of General Ability. Contact: Science Research Associates, 259 Erie Street, Chicago IL 60611.

■ *Inventories and questionnaires that tap the potential of the culturally diverse child.** The following are designed for use with elementary and secondary school students. They allow the student to describe himself and his background.

- Alpha Biographical Inventory. Available from Institute for Behavioral Research in Creativity, University of Utah, Salt Lake City UT 84112.
- Relevant Aspects of Potential (RAP). Contact: RAP Researchers, Sandy Lane, Marlborough CT 06424.
- Behavioral Identification of Giftedness Questionnaire (BIG). Contact: Western Behavioral Science Institute, 1150 Silverado, La Jolla CA 92037.

■ *Examples of procedures suggested to select the culturally diverse gifted and talented.**

- A method advanced by Stallings includes environmental testing, teacher observation, and peer evaluation, the Stallings Environmentally Based Screen (SEBS). Contact: Dr. Clifford Stallings, United States International University, 10455 Pomerado Road, San Diego CA 92131.
- Fitzgibbon (1975) reports identifying the top 2% in ability among eighth graders in an inner city school using a combination of the California Test of Mental Maturity, Ravens Matrices, and the California Achievement Test.

*Note: Instruments and methods listed here are for informational purposes only. No endorsement by either The Council for Exceptional Children or the US Office of Education is intended or implied.

What steps must be taken to create effective learning environments for the culturally diverse gifted and talented?

- *Accept* the fact that children from culturally diverse backgrounds are not innately deficient, and that they do deviate upward from the norm.
- *Recognize* that all programs for the gifted and talented should provide both in-school and out-of-school opportunities, and that program success depends on focusing attention on developing potential.
- *Plan* program opportunities which encourage the expression of abilities within the context of cultural diversity.
- *Develop* inservice programs which concentrate on developing curricula that capitalize on the potential of the culturally diverse.
- *Interpret* to parents and the community a commitment to finding and developing the potential of the culturally diverse.
- *Be sensitive* to the needs of culturally diverse youngsters and *reinforce* their achievements.
- *Use* the potential of divergent cultural expression to instill pride and a sense of appreciation for the values of diversity and pluralism.

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Prepared by Mary M. Frasier, University of Georgia at Athens.

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DEVELOPING PROGRAMS FOR THE GIFTED AND TALENTED

Produced for the Office of Gifted and Talented, US Office of Education, Department of Health, Education, and Welfare by The Council for Exceptional Children.

The success of programs for the gifted and talented student depends on sound development, efficient identification, and exemplary curriculum. Where there are a number of positive program alternatives there is no need to become locked into a single design. Consideration should be given to all available program formats before deciding which single or combination of alternatives to employ.

How do I begin?

The first step in program development is planning. Planning is usually divided into three components:

- *Needs analysis.* Because every community represents a unique constellation of factors, an analysis of local needs should be conducted. This analysis should consider all aspects of the community and educational system to determine a realistic base for the size and scope of the program. Often, the availability of funds and physical facilities will have a bearing on the dimensions of the program. A team representing a cross section of the community should conduct this assignment.
- *Target group.* The needs assessment may also provide important information on the target group for the program. A broadened concept of giftedness has been established by the US Commissioner of Education in the 1971 *Report to Congress on the Education of the Gifted and Talented.* This definition cites six categories of giftedness: general intellectual ability, specific academic aptitude, creative or productive thinking, leadership ability, visual and performing arts, and psychomotor ability.
- *Identification.* Multiple criteria should be used to identify students in the target category and should include both standardized and subjective assessments. For the intellectually gifted, measures on achievement and intelligence tests are appropriate with scores falling in the upper 2 to 3 percentiles of national or local norms. High creative producers can be identified through the use of tests of creativity and creativity checklists. Judgments by professional personnel using more subjective instruments should be combined with standardized assessments of either intellectual or creative ability. Parents and other adults knowledgeable about a child's performance outside the school should be consulted. In the creative arts, potential or demonstrated ability can be assessed through the judgments of experts in the field through interviews and/or auditions. In selecting students for a gifted and talented program, the student's areas of interest, abilities, and insight should be considered.

What kind of staff should be employed?

The selection of staff is a key factor in the success of the program. Desirable characteristics for teachers of the gifted and talented student include demonstrated competency in general educational techniques such as developing individualized curriculum, utilization of innovative techniques, use of strategies which encourage high levels of thinking, extensive knowledge of their subject area(s), along with such personal characteristics as self confidence, security, understanding, and a desire to work with gifted and talented students. Though often overlooked, stamina is a highly desirable factor, too.

What objectives are appropriate for a program for the gifted and talented student?

Objectives for the program should be established at several levels of the design. These levels involve the program, the teacher, and the pupil. Defining objectives is an essential part of program development, as they often form the basis of evaluation. Program objectives relate to the target population and anticipated development. Teacher objectives integrate more general program objectives with the specific needs of the students while tapping personal teacher strengths and interests. Pupil objectives are the vehicle through which the program goals are achieved.

What program designs are commonly employed?

There are three general designs that program planners find useful:

- *Centralized.* This is a regional concept in programing which can serve the specialized needs of the gifted and talented student from a number of different school districts. A re-

gional resource center is usually established which offers a wide range of facilities and a staff of experts in gifted and talented education. The center can specialize in one specific area of giftedness or provide options in many academic or talent categories.

- *Cluster.* This also features a resource center, but offers services to students from several schools within a given district or from several districts. It may serve elementary students, secondary students, or a combination of the two.
- *Decentralized.* The decentralized design offers programing for the gifted and talented within the local school and an itinerant teacher approach is often employed. This design may incorporate several approaches to programing for the gifted and talented by making a teacher of the gifted available to consult with regular classroom teachers or to conduct demonstration lessons.

What resources exist for program planning?

All areas are rich in resources. Each district should investigate those resources available for use with its program. Community resources within an area may encompass all of the natural environment and urban centers. Specialists in a number of occupations may reside in your community. Members of the local school staff may also constitute valuable human resources.

How is curriculum for the program determined?

The curriculum for a gifted and talented program is not a road map for the teacher to follow without making any detours. It is unique in every community and with every target population. However, there are some common elements upon which the curriculum should be based. It should focus on the development of skills which are beyond the scope of the regular classroom, and content should be in the student's areas of interest. Subject matter should be studied in its appropriate context, using the techniques of the field rather than engaging in an abstract exercise. It should also focus on the conceptual themes of important ideas rather than on the mere collection of new facts. Finally, the curriculum should include options which offer the student the freedom to explore.

How are programs for the gifted and talented evaluated?

Evaluation should be conducted at each program level where objectives were established. The objectives should be written in measurable terms or should cite the instrument which will be used in the evaluation of that objective. Both cognitive and affective assessments should be made in order to view the program from several perspectives. Evaluation can be *formative*, where data is collected throughout the operation of the program in order to point out areas which may need modifications, or *summative*, which takes place at the conclusion of the program to determine end results. A combination of both types has proved to be most successful.

RESOURCES

For more information concerning programing for the gifted and talented student, contact the state consultant for the gifted and talented in your state department of education or write:

The Council for Exceptional Children
1920 Association Drive
Reston, VA 22091

Additional reading in the area which may be helpful

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Prepared by Lynne D. Niro, Hamden, Connecticut.

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CHARACTERISTICS OF THE GIFTED AND TALENTED

Produced for the Office of Gifted and Talented, US Office of Education, Department of Health, Education, and Welfare by The Council for Exceptional Children.

There are numerous lists of characteristics or distinguishing features and attributes of gifted and talented children. Teachers and parents should interpret any single list, including this one, as exemplary rather than exclusive. Few gifted children will display all of the characteristics. Understanding the characteristics of gifted and talented children will help parents and teachers sharpen their observations of these children in two distinct ways: (a) While characteristics do not necessarily define who is a gifted child, they do constitute observable behaviors that can be thought of as clues to more specific behaviors, and (b) these characteristics are signals to indicate that a particular child might warrant closer observation and could require specialized educational attention, pending a more comprehensive assessment.

General characteristics of gifted/talented children.

- They typically learn to read earlier with a better comprehension of the nuances of the language. As many as half of the gifted and talented population have learned to read before entering school. They often read widely, quickly, and intensely and have large vocabularies.
- They commonly learn basic skills better, more quickly, and with less practice.
- They are better able to construct and handle abstractions than their age mates.
- They are frequently able to pick up and interpret nonverbal cues and can draw inferences which other children have to have spelled out for them.
- They take less for granted, seeking the "hows" and "whys."
- They display a better ability to work independently at an earlier age and for longer periods of time than other children.
- They can sustain longer periods of concentration and attention.
- Their interests are often both wildly eclectic and intensely focused.
- They frequently have seemingly boundless energy, which sometimes leads to a misdiagnosis of "hyperactive."
- They are usually able to respond and relate well to parents, teachers, and other adults. They may prefer the company of older children and adults to that of their peers.

Creative characteristics.

- They are *fluent* thinkers, able to produce a large quantity of possibilities, consequences, or related ideas.
- They are *flexible* thinkers, able to use many different alternatives and approaches to problem solving.
- They are *original* thinkers, seeking new, unusual, or unconventional associations and combinations among items of information. They also have an ability to see relationships among seemingly unrelated objects, ideas, or facts.
- They are *elaborative* thinkers, producing new steps, ideas, responses, or other embellishments to a basic idea, situation, or problem.
- They show a willingness to entertain complexity and seem to thrive in problem situations.
- They are good guessers and can construct hypotheses or "what if" questions readily.
- They often are aware of their own impulsiveness and the irrationality within themselves and show emotional sensitivity.
- They have a high level of curiosity about objects, ideas, situations, or events.
- They often display intellectual playfulness, fantasize, and imagine readily.
- They can be less intellectually inhibited than their peers in expressing opinions and ideas and often exhibit spirited disagreement.
- They have a sensitivity to beauty and are attracted to aesthetic dimensions.

Learning characteristics.

- Gifted and talented children often show keen powers of observation, exhibit a sense of the significant, and have an eye for important details.
- They often read a great deal on their own, preferring books and magazines written for youngsters older than themselves.
- They take great pleasure in intellectual activity.
- They have well developed powers of abstraction, conceptualization, and synthesizing abilities.
- They have rapid insight into cause-effect relationships.
- They tend to like structure, organization, and consistency in their environments. They may resent the violation of structure and rules.
- They display a questioning attitude and seek information for the sake of having it as much as for its instrumental value.
- They are often skeptical, critical, and evaluative. They are quick to spot inconsistencies.
- They often have a large storehouse of information regarding a variety of topics which they can recall quickly.
- They show a ready grasp of underlying principles and can often make valid generalizations about events, people, or objects.
- They readily perceive similarities, differences, and anomalies.
- They often attack complicated material by separating it into its components and analyzing it systematically.
- They have a well developed common sense.

Behavioral characteristics.

- They are willing to examine the unusual and are highly inquisitive.
- Their behavior is often well organized, goal directed, and efficient with respect to tasks and problems.
- They exhibit an intrinsic motivation to learn, find out, or explore and are often very persistent. "I'd rather do it myself" is a common attitude.
- They enjoy learning new things and new ways of doing things.
- They have a longer attention and concentration span than their peers.
- They are more independent and less subject to peer pressure than their age mates. They are able to be conforming or nonconforming as the situation demands.
- They have a highly developed moral and ethical sense.
- They are able to integrate opposing impulses, such as constructive and destructive behavior.
- They often exhibit daydreaming behavior.
- They may seek to conceal their abilities so as not to "stick out."
- They often have a well developed sense of self and a realistic idea about their capabilities and potential.

RESOURCES

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Prepared by Bruce Boston, Fairfax, Virginia.

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CURRICULUM FOR THE GIFTED AND TALENTED

Produced for the Office of Gifted and Talented, US Office of Education, Department of Health, Education, and Welfare by The Council for Exceptional Children.

The development and implementation of a curriculum which allows gifted and talented students to develop their potential and explore new domains of knowledge should be a high priority for all school systems. Educators responsible for designing curriculum for the gifted and talented must be well grounded in the special characteristics and abilities of these students in order to devise effective and challenging learning activities.

What is a curriculum?

Simply put, curriculum is a course of study. As such, it includes both the content to be learned and the processes which facilitate that learning. Curriculum is the medium through which learning occurs.

How does a curriculum for the gifted and talented differ from a "regular" curriculum?

Gifted and talented students, because of their special abilities, require opportunities which encourage:

- The development of abstract thinking.
- The sharpening of reasoning abilities.
- Practice in creative problem setting and solving.
- Higher cognitive processing, i.e., analysis, synthesis, and evaluation.
- In the case of particular talents, educational settings which allow them a full range of expression.

Curricula for the gifted and talented often include activities which focus on interpretation of material being investigated, summative skills, creativity, divergent thinking, decision making, and independent inquiry. While instructional units for both the gifted and talented curriculum and regular curriculum can be similar, the breadth, depth, and intensity of learning activities within the gifted and talented curriculum mark it as distinctive.

What do the terms "enrichment" and "acceleration" mean in connection with a curriculum for the gifted and talented?

Enrichment programs are generally those which go beyond normal classroom activity by offering students a greater latitude of inquiry. A unit on the American Revolution, for instance, could be enriched by an exploration into the concept and historical development of revolution.

Acceleration programs generally cover the same material as a normal curriculum but at a much faster pace. This is common in math and science programs for the gifted, where two or more years of work may be covered in a year or less.

Who determines a curriculum for the gifted and talented?

Teachers are usually responsible for the design and implementation of curriculum for their gifted and talented students. Students can also share in this responsibility. It is important to emphasize that curriculum for these students should not be a predetermined route which all must follow. Curriculum is a framework for individual learning alternatives. As such, it should be flexible enough to meet the needs of both pupils and teachers.

Does a curriculum designed for the gifted and talented diminish the role of the teacher?

The major goal of a curriculum for the gifted and talented is to provide more opportunity for independent learning. The processes of learning and thinking assume a higher priority than the internalization of information. This emphasis enhances the role of the teacher as a director of learning while diminishing the teacher's role as a conduit for data.

What are some important considerations in designing a curriculum for the gifted and talented?

The most desirable curriculum is one which fits the learning modes of the students. It should allow students the opportunity both to create and consume learning as well as offer alternative activities for achieving learning objectives.

What are some curriculum alternatives for the gifted and talented?

Among the many options available, teachers and program planners may want to consider the following examples:

- *Subject or skill.* A particular domain of knowledge or skill which provides the substance for directing the curriculum, such as scientific research skills which can be applied in many situations.
- *Core subject.* A generalized theme or topic with broad and diverse applications to several subject areas which is used to develop and integrate learning experiences, such as the interdependence of man.
- *Basic question.* An outline of basic questions which formulates the learning experience, such as "What is causing the energy crisis?"
- *Process.* Particular thinking skills which are applied to selected topics or themes, such as designing a new city.

Teachers must also consider the environment in which a curriculum will be used. It should include personal, social, and cultural elements which can become learning tools. While the curriculum should have a strong theoretical foundation, it should also produce measurable outcomes.

Curricula can come in a variety of formats. Some common formats include the learning guide, the unit, the task card, the learning center, and the learning kit.

RESOURCES

For more information concerning curriculum for the gifted and talented, contact the consultant for gifted and talented education in your state department of education or write to:

The Council for Exceptional Children
1920 Association Drive
Reston, VA 22091

Readings in the area which may be helpful are:

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EVALUATION OF PROGRAMS FOR THE GIFTED AND TALENTED

Produced for the Office of Gifted and Talented, US Office of Education, Department of Health, Education, and Welfare by The Council for Exceptional Children.

What is educational evaluation?

Educational evaluation is a tool for determining if the goals and objectives of an educational program are being met and the reasons for success or failure in meeting them. An evaluator makes this determination by gathering data about all aspects of the program: its procedures, practices, methods, innovations, materials, and personnel.

There are two general types of evaluation, each with its own purpose. *Summative evaluation* can be used to judge the overall impact and effectiveness of an entire program, or part of a program, after a specified period of time. *Formative evaluation* can be used to provide feedback while the program is still going on, so those aspects of the program which impede the achievement of goals and objectives can be modified.

Evaluation should not just provide judgments. It should also offer alternative approaches and suggestions for improvement.

Why do we need to evaluate programs for the gifted and talented?

As interest in gifted and talented education has grown, there has been a proliferation of programs to serve these students. In order to make reasonable judgments about the effectiveness of various identification procedures, curriculum designs, teaching strategies, and administrative arrangements, their impact has to be carefully assessed. Too often those things which look good on paper or in textbooks turn out to be unsatisfactory in specific situations or with specific children. The positive and negative effects of various program features must be evaluated in order to guide local decision makers toward appropriate modifications.

Accountability also demands evaluation. As competition for the educational dollar becomes more intense, programs for the gifted and talented will be scrutinized more carefully. It will not be possible to rely on conjecture or feelings to persuade public agencies to commit funds for gifted and talented students. Educators will need convincing evidence on the effectiveness of programs for developing the potential of these students.

How can I develop an effective evaluation design?

- *Begin at the beginning.* Planning for evaluation should begin at the same time as planning for the program itself. Evaluations as afterthoughts, used in an attempt to rescue the floundering program, are usually too little and too late. Overall surveys of some basic educational evaluation designs, including first steps, are provided by Worthen and Saunders (1972) and Renzulli (1975).

- *Identify decision makers.* Evaluation designs should identify the administrative decision makers who can use the evaluation data to improve program functioning. Together with these decision makers, the evaluators should plan a design that will provide useful information on the degree to which program goals are being met. Factors contributing to or inhibiting the success should also be identified.

- *Specify goals and objectives.* Being specific about goals and objectives is crucial to evaluation planning. These may be gleaned from statements of philosophy, curriculum guides, project proposals, interviews, and from other sources. It is essential that both cognitive and affective components of student development be examined. The evaluator may also choose to look into other effects not specifically noted as goals and objectives, such as the effect of removing a gifted child from the classroom on peer relations. All factors to be evaluated should be listed, including outcomes for students, impact on school and community, communication, management, attitudes, and finances.

- *Identify sources of information.* Once basic concerns have been isolated, identify the sources of information on each and construct a timetable for collecting the data. Student performance and progress may best be measured by a pretest and posttest design, but students themselves are probably the best source of information about student growth. If the evaluation design compares experimental and control groups, the selection of students for both groups should be made early so that baseline data can be appropriately gathered prior to program implementation.

How can I select evaluation instruments which will meet the needs of my program?

After determining the best sources of information and a timetable for gathering it, data gathering instruments must be selected. Because inappropriate instruments produce worthless evaluations, this task is extremely important. A first step is to consult *The Sixth Mental Measurements Yearbook* (Buros, 1965) for reviews of published tests and instruments which can measure the goals and objectives specified in the program. If you are unsure about the choice of a test, seek the guidance of a consultant. If no existing instruments suit your precise needs, one must be constructed. Since instrument construction is a highly specialized, complex, and time consuming activity, it must be done expertly. If you have no expertise in this area, a consultant should be brought in.

What do I do with the information once it is collected?

If you have carefully specified the questions which were asked when collecting the data, analysis can proceed by grouping the data relevant to a particular question. If statistical analysis is necessary and you do not have this skill, seek the advice of a statistician *before* collecting the data.

How should I report my findings?

The major consideration in reporting evaluation findings is to tailor the report to its audience. If changes must be made in the program, the language of the evaluation report should be one that decision makers understand. If more expensive activities must be undertaken, the report should make sense to a budget committee. Avoid technical statistical discussions. School boards generally do not respond well to the subtleties of covariant analysis and multiple regression equations. Whenever possible, use charts, graphs, and illustrations to make your results clear.

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Prepared by Joseph S. Renzulli, University of Connecticut and Carolyn Callahan, University of Virginia.

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FINDING FUNDS FOR GIFTED PROGRAMS

Produced for the Office of Gifted and Talented, US Office of Education, Department of Health, Education, and Welfare by The Council for Exceptional Children.

In a nation sold on the idea that equal education means the same education for all students, advocates of special education for any exceptional group must work to convince the rest of the community of the need for different educational programs.

Advocates of programs for the gifted and talented frequently must act as persuasive salesmen in communities that spend their money on other "products." This includes convincing them to pay the bill for services.

Sprucing up the idea.

Right now you probably have an idea either to begin, continue, or expand a program for the gifted and talented. A number of other people support this idea and are willing to work with you. Together your group must start selling the idea to others. This requires expanding the idea and developing it into a written program proposal which should clearly and concisely explain what is to be accomplished, who expects to accomplish it, how much it will cost, and how long the program will last. Below are some features which you should consider in your written program proposal:

- *Description of the program.* This should contain an objective assessment of the need for such a program with a defense of why *this* program is needed, clearly stated goals and objectives, and major features of the proposed program and how these will meet the stated objectives.
- *Staffing.* This section should give brief explanations of positions and duties, the biography or vita of key individuals who have already been selected and the qualifications required for selection of the other positions, as well as establish that the staff can accomplish the job.
- *Budget.* This should present a clear delineation of costs including rationale for figures. The figures should be realistic not "padded" to allow room for bargaining.
- *History of your organization, if applicable.* This should describe the objectives of your group and give an explanation of your past achievements and resources.
- *Other materials.* Some that you may want to include in your program proposal are letters of endorsement or any other materials you think are relevant, such as reports of previous projects or activities.

Who might buy it.

Pull the program supporters together and outline a strategy for obtaining the necessary funds. Such a strategy should probably focus first on local sources for support. When these are exhausted and you have not obtained the needed funds, then consider state level sources. National level sources, such as the federal government and foundations, should probably be solicited last as these sources often require a great deal of competitive effort to locate and to meet their requirements. Also, waiting for approval of your program and the actual receipt of the first check may take too much time.

Your group may want to "brainstorm" local sources that should be considered. Remember to include your school district, local business and industry, local branches of nationwide companies, civic organizations, and local philanthropists. Often the key to receiving money is a personal contact within an organization, so as you brainstorm find out who has any special contact with the possible source. Use these contacts when approaching the sources to request funding. For example, the proposal could be sent along with a letter introducing the program and expressing personal support from an influential friend of your group.

If you also need to solicit from statewide sources, you may wish to contact the consultant for gifted and talented in your state's department of education as well as resources familiar with business and industry in your state.

Your strategy should be flexible so that a refusal from one organization does not halt your efforts. You may only get a portion of your funding from one source and it may take the contributions of several organizations or agencies to yield your total budget.

How to sell it.

You have written your proposal and identified sources which may be interested in funding it. Now comes the selling part of

the process when you convince enough of those sources to buy your program. This may require considerable flexibility as you emphasize some aspects of your program and de-emphasize others in order to match the funding priorities of different potential supporters.

Before you approach an organization, investigate their objectives, their interests, and the nature of their past and present contributions. Tailor your proposal and presentation to appeal to their unique pattern of involvement.

After you have decided on your approach to a given organization, you should initiate the first contact by telephone or letter. Make sure that your first contact, particularly if it is a letter, is directed to the proper person. The purpose of this contact is to ascertain if the organization is interested in hearing more about your program. It probably will be better to wait before mailing or taking the full proposal to them until after they have shown an interest. They will respond by indicating the criteria or specifications which should be used to amend the proposal to make it acceptable.

When the organization expresses a further interest in examining your program, respond quickly with the proposal and a cover letter. If possible this letter should be written by a person who has a contact in the organization. The spokesperson for the proposal may wish to include the key individual(s) of the program when visiting an interested source of funding.

Finally, when you have sold your program to enough organizations to achieve your funding goal, don't forget "the hand that feeds you." Keep up the contacts and advise them of your progress. If you have to go through another round of selling, you will probably already have developed a core of convinced listeners.

RESOURCES

The bread game: The realities of foundation fundraising. San Francisco: Glide Publications, 1972.

The foundation directory. (6th ed.). New York: The Foundation Center, 1977. (Available through your public library. The introduction provides helpful information on structuring a foundation proposal.)

You may also want to write to the following organizations:

The Foundation Center
888 Seventh Avenue
New York, NY 10019

Office of Gifted and Talented
US Office of Education
400 6th Street, S.W., Room 3835
Washington, D.C. 20202

For listings of businesses and industries, write to your local or state chamber of commerce or:

US Chamber of Commerce
1615 H Street, N.W.
Washington, D.C. 20062

Discuss your program with the consultant for gifted and talented in your state education agency.

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FORMING A LOCAL PARENT ASSOCIATION FOR GIFTED AND TALENTED EDUCATION

Produced for the Office of Gifted and Talented, US Office of Education, Department of Health, Education, and Welfare by The Council for Exceptional Children.

The following suggestions on forming a parent association are intended only as general guidelines. Although each local group will use the suggestions that will be most helpful in terms of its own needs, circumstances, and goals, two points are paramount: (a) Allow your group time to grow. Many times school districts will adopt a "wait and see" attitude before establishing a working relationship with a parent group, and (b) remember also that the school district is not the "enemy." It represents your best chance of securing appropriate educational opportunities for gifted and talented children.

How should I go about establishing and developing a parent group?

- *Membership.* Parent groups can begin with just a few concerned parents and educators. New members can be located and recruited through advertisements in PTA newsletters, community association newsletters, the local newspapers, and by word of mouth. From among initial respondents, a steering committee can be set up and task forces assigned to deal with specific concerns.
- *Affiliation with a state level group.* Many statewide groups have community chapters, enabling local members to participate in a larger advocacy network. The community group can also receive valuable support during its organizational stage with technical assistance available at the state level. If your state does not have a state level group, you may want to investigate affiliation with an existing organization in a neighboring community.
- *Group name.* You may choose something relatively straightforward, such as The (City) Chapter of (State) Association for the Gifted and Talented, or you may select another name which reflects special concerns. You should, however, choose a name which reflects your advocacy interest so that it can be easily recognized by prospective members.
- *Constitution and bylaws.* The constitution and bylaws of the state association may serve as a model and you can insert material which relates to local needs or purposes. A copy of the constitution and bylaws along with membership cards should be supplied to all members. If there is no state association, your constitution should cover the group's purposes, offices, elections, committees, meetings, meeting procedures, and amendment procedures. Bylaws should reflect local matters such as dues and should be flexible enough to permit easy changes.
- *Meetings.* State associations frequently offer special interest workshops and programs in various locations throughout the state. A team of representatives from your local group may want to attend and report back to your group. Consider developing a speaker's program based on an "interest inventory" of the membership. Topics might include: parenting the gifted and talented, characteristics of the gifted and talented, state and federal legislation, reports from other programs in the state, and summer programs. Meetings can also be scheduled around advocacy activities, field trips with children, and social events.
- *Dues.* Dues should be sufficiently high to cover the operating expenses of the association, such as mailings, phone costs, speaker's programs, refreshments, and advocacy activities such as a trip to the state capitol to talk to legislators. However, try to keep dues as low as possible.
- *Newsletter.* If your state has a state association, it most likely has a newsletter which keeps local chapters informed about state, local, and national events. Local chapters can submit news items, a calendar of events, and reports on programs. If no newsletter is available, start your own. It can become a vital communication link among members, schools, and the community. It may also attract new members.

As you get under way, what should you be concerned with first?

- *Make sure your objectives are clear.* Determine the primary purpose(s) of your group and be able to identify the advantages of belonging.
- *Make sure the group's structure conforms to its objectives.* There are many areas of interest and action for parent associations, each of which should have a separate task

force. These task forces should concern themselves with increasing the awareness of the needs of gifted and talented children in the home, school, and community; establishing weekend, parent run enrichment programs outside the school system; developing a volunteer program to provide special classes within the schools; encouraging community agencies to offer opportunities and programs for gifted and talented students; supporting the efforts of the local school system; investigating special needs of gifted and talented students, such as development of the affective domain; and supporting legislation at state and federal levels.

- *Keep accurate records.* Information on group activities, membership, a "skill roster," resources, and accomplishments has both present and future value.
- *Communication.* In addition to a newsletter, develop a telephone network both for routing organizational matters and for responding to urgent requests for legislative support.
- *Be ready to evaluate.* If your objectives are clear at the outset, you will better be able to assess the group's effectiveness and develop strategies for improvement.

What kind of agenda should a parent group have to keep the group going?

- *Visit the school system.* Contact the superintendent of schools for an appointment to discuss programs and plans for the gifted and talented. Ask about their relative priority within the school district and the state. If programs are available, visit them and talk to principals and teachers. Become thoroughly familiar with school board procedures. Parent groups can also volunteer support. If programs are not locally available, offer to cooperate in getting them started.
- *Survey the community.* The group can contact each school and PTA to determine the number and needs of gifted and talented students in the community. Investigate community resources, such as educational, cultural, and governmental units, to determine what services already exist and who can help with unmet needs. Explore the possibility of developing private sector resources to start or expand programs.
- *Establish linkages.* Parent groups in neighboring communities are often sources of valuable information on pitfalls to avoid, program suggestions, speakers, and moral support. Cooperative ventures can also be launched.
- *Contact the state consultant for the gifted and talented.* Each state department of education has a person assigned to the area of gifted and talented education. You can request information on legislation and funding, programs, other parent groups and their activities, agencies which provide services for the gifted and talented, and where to locate materials to distribute to your members.
- *Contact your legislators.* Become thoroughly familiar with your state's laws and the state education agency's policy on the education of the gifted and talented. When you contact your state senator or representative, be prepared to speak in *specific* terms about both legislation and policy. Invite legislators to speak to your group and be prepared to contact them during each legislative session to offer support and express particular interests.

RESOURCES

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Prepared by Lynne D. Niro, Hamden, Connecticut.

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PARENTS OF GIFTED AND TALENTED CHILDREN

Produced for the Office of Gifted and Talented, US Office of Education, Department of Health, Education, and Welfare by The Council for Exceptional Children.

What is a good working definition of gifted and talented?

The US Office of Education has identified six areas in which children may demonstrate capabilities of high performance or giftedness:

- General intellectual ability—the all around bright child.
- Specific academic aptitude—the math or science whiz.
- Creative or productive thinking—the child who comes up with novel solutions to problems.
- Leadership ability—initiates and leads games and groups.
- Ability in the visual or performing arts—painting, music, drama, and sculpture.
- Psychomotor ability—athletic ability and mechanical skills.

A gifted child may have one or more of these abilities. One leading educator defines gifted and talented children as those who have learned to use the symbol systems of our society at a much higher and more effective rate than other children. However, a parent leader offers a less technical definition, saying gifted and talented children do things a little earlier, a little better, a little more quickly, and a little bit differently from other children. Parents also gather much useful information by observing the behavior of their children.

What are some behaviors or characteristics to look for?

- Gifted children learn to read earlier often before entering school and sometimes on their own and with a greater comprehension of the nuances of language.
- They usually have large vocabularies for their age.
- They learn basic skills more quickly and need less practice.
- They display an ability for abstract thinking in advance of their peers.
- Their concentration and attention spans are longer.
- They often have a wide variety of interests and experiment with them.
- They have a highly developed sense of curiosity and a limitless supply of questions.
- They are good guessers.
- They can construct relationships between things that are not readily obvious.
- They can retain a lot of information.
- They usually relate well to peers and adults.

Many behavioral checklists for gifted and talented children are available. Check with your school system or with one of the resources listed in this fact sheet for assistance in securing a checklist.

How is a gifted and talented child identified?

Several sources of information should be used to identify gifted and talented children, such as reports from teachers, parental observations, pupil products, school achievement, standardized tests of intelligence and creativity, case studies, and other measures.

My children have been identified as gifted and talented. What can I do at home to encourage them?

- It is important to provide a variety of stimuli and experience geared to the child's natural interests. Books, toys, stories, puzzles, and games are obviously helpful, but you should also take care to provide materials and experiences that enrich imagery, challenge the child's abilities, and encourage the development of perceptual and motor skills.
- Encourage your children to record their ideas in some way. Parents can sometimes play secretary.
- Permit ample time for thinking and daydreaming. These are the child's equivalent to a full time job.
- Assign household tasks that coincide with interests.
- Encourage your children to translate their interests into specific products, e.g., stories, pictures, collections, inventions, tools. Be a cautious editor. Budding creativity does not stand up well to stifling in the name of correctness.
- Accept and use the tendency to see things differently.
- Encourage active rather than passive learning.

- Play word games. Common settings like shopping and shared chores provide occasions for all kinds of word play.
- Do not be anxious about single mindedness—"All she cares cares about is horses!" This, too, shall pass.
- Develop the habit of asking your children as many questions as you are asked. For example, "What would happen if . . . ?" "How does it work?" "How would you change it?" "What else can you do with that?" "Why?" "What will it be like a (week, month, year) from now?"

My children are gifted and talented but they seem turned off and tuned out. What's going on?

A gifted and talented child is a child first and gifted and talented second. Like all children, they need and respond to the love, caring, interest, and guidance of their parents. Sometimes, however, being gifted and talented becomes a burden, especially if the children's environment does not meet their needs and expectations or if peers react negatively to their abilities. They may act out frustrations in the form of disruptive behavior, become insecure, or withdraw. It is not uncommon for gifted and talented children to achieve at levels lower than their capabilities if lack of a challenge in school produces disinterest. Meeting these problems will require a cooperative effort between parents, school officials, and in some cases, a professional counselor.

What about programs in the schools?

Many schools have programs for gifted and talented children, but they are not always appropriate for every gifted and talented child. Program administrators and teachers can help you decide. If no program exists, you may want to think about helping to start one or consult with teachers to see what can be done to meet your child's special needs within the regular class.

Is there an association or group I can join?

There is probably a state level association for parents of gifted and talented children in your state or in a large city near you. Address inquiries to your state education agency's consultant for the gifted and talented. You may also want to join one of these national associations which welcome parents:

The Association for the Gifted
The Council for Exceptional Children
1920 Association Drive
Reston, VA 22091

The American Association for Gifted Children
15 Gramercy Park
New York, NY 10003

The National Association for Gifted Children
217 Gregory Drive
Hot Springs, AR 71901

RESOURCES

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Ginsberg, G. *Is your child gifted?* New York: Simon and Schuster, 1976.

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THE PRESCHOOL GIFTED AND TALENTED CHILD

Produced for the Office of Gifted and Talented, US Office of Education, Department of Health, Education, and Welfare by The Council for Exceptional Children.

Who is the preschool gifted and talented child?

The preschool child, ages 2-5, who functions significantly above age level in language development, cognitive and social skills, physical adaptability, creativity, or leadership may in fact be gifted and talented. Criteria for identifying preschool gifted and talented children may be specifically defined by state or local guidelines.

Is early identification and education of value to the preschool gifted and talented child?

There are strong indications that much of a person's mature intelligence is developed between conception and 4 years of age. Therefore, it is important that the young gifted and talented child be exposed to a high quality learning environment as soon as possible. Learning environments should be designed to meet the unique needs of each child, and the child's indication of readiness to learn should be a determining factor in the type of challenge presented. It is important to remember that demonstration of advanced ability in one area does not necessarily mean similar levels of competence in all areas.

How can a preschool gifted and talented child be identified?

If a standardized intelligence test is to be used as a part of the identification process, it should be administered by a professional who is experienced in working with preschool children. A child with advanced skills may not have been exposed to the types of experiences necessary for superior performance on a standardized IQ test.

Tests should never be used exclusively to determine children's potential ability for assessing cognitive development. Techniques such as those developed by Piaget may effectively supplement standardized measures. Teacher checklists, parent observations, and peer nomination procedures are all helpful in identifying gifted and talented children.

What are teacher checklists?

If a child is enrolled in a preschool program, the teacher will have many opportunities to observe those characteristics and behaviors that may indicate exceptional ability. Some of the characteristics that a teacher could observe in gifted and talented preschool children are:

- The use of advanced vocabulary for their age.
- Employment of spontaneous verbal elaboration with new experiences.
- The ability to construct interesting or unusual shapes or patterns through various media, such as blocks, play dough, and crayons.
- The ability to assemble puzzles designed for older children.
- A sense of humor used in general conversation.
- An understanding of abstract concepts, such as death and time.
- Mastery of new skills with little repetition.
- Demonstration of advanced physical skills.
- Demonstration of advanced reasoning skills through the explanation of occurrences.

The use of a checklist that includes these and other characteristics can be of great help in alerting teachers to potentially gifted and talented children.

What should parents be looking for in observing their children?

Parent observations can assist in the identification of preschool gifted children. Parents are able to supply developmental information and other data not readily observable in more structured situations. A child's approach to dramatic play, constructive play, and humor can provide a great deal of information regarding the child's level of cognitive development. Intensive interaction among young children takes place during less supervised and less structured play situations and therefore, should be included as part of a comprehensive identification process. Observations should take place when children are free to choose activities either alone or with others and when they have access to a variety of materials. Free play behavior should be observed for periods of approximately 15 minutes. Include at least one indoor and one out-

floor observation. Make observations for several days and record them for future reference.

Some questions which may guide parent observation are:

- *Dramatic play.* Do your children ever engage in make believe play in which they pretend or simulate situations and people? Which best describes the variety in your children's dramatic play? (a) have one favorite theme which they use almost all of the time, (b) have two or three favorite themes which they like to vary but generally stick with, or (c) have a wide range of themes and enjoy variety.
- *Constructive play.* Do your children ever engage in play in which they make things, build things, or draw? When they are free to build or make things, what do they make? Which statement best applies to the products of your children's constructive play? (a) attempt to make products as representative of reality as possible, (b) products have some representation to reality but have some unique aspects as well, or (c) draw or make things as they remember them or as they would like for them to be with little attention to perspective, proportion, or relationships.
- *Humor.* Which statement best describes your children's ability to perceive humor? (a) make little or no attempt to do or say funny things, (b) attempt to do or say some funny things primarily to imitate what they have seen others do, or (c) can take information and use it to produce creative humor which is new for them.

Why should information from a child's peers be considered?

Children's perceptions of their peers can be a revealing source of information. Therefore, nominations of children by their peers should be included in the identification process, especially at the preschool level. To find out how children who possess unique abilities are perceived by their peers, the following types of questions can be asked:

- Which child in class can make a broken toy work?
- Who in the class can make up the best new game?
- Who is the very best at following directions?
- Who asks the most questions?

How can parents help meet the needs of the preschool gifted and talented child?

Parents can help meet the needs of their preschool gifted and talented children by providing them with a wide variety of experiences. Take children to museums, airports, and the library. Play new games, do experiments, engage in sports, together. If your child is enrolled in a structured educational or enrichment program, parent participation, input, and support are vital to ensure that the program is meeting the needs of the child. Parents are their child's first teachers and, therefore, have a responsibility to provide that child with secure, quality, learning environments.

Where can I get more information about preschool gifted and talented children?

If you are interested in more information on preschool gifted and talented children, you may wish to contact the state consultant for the gifted in your state department of education or write:

Information Services for the Gifted and Talented
The Council for Exceptional Children
1920 Association Drive
Reston, VA 22091

RESOURCES

Delp, J., & Murtinson, R. *The gifted and talented: A handbook for parents.* Ventura, CA: Office of the Ventura County Superintendent of Schools, 1975.

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Prepared by Gail Hanninen, Panhandle Child Development Association, Inc., Coeur d'Alene, Idaho and John Grossi, The Council for Exceptional Children.

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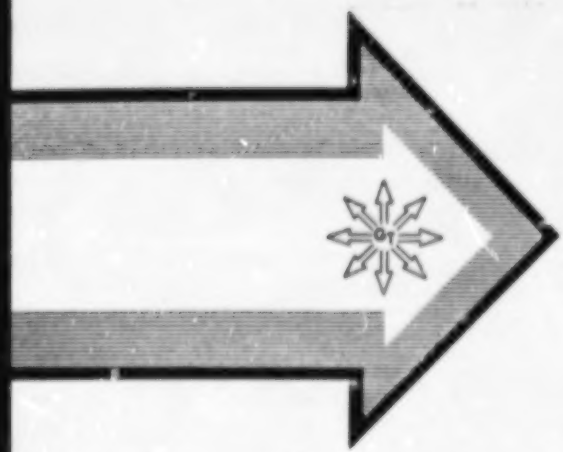

THE GIFTED AND TALENTED HANDICAPPED

Produced for the Office of Gifted and Talented, US Office of Education, Department of Health, Education, and Welfare by The Council for Exceptional Children.

Who are the gifted and talented handicapped?

The gifted and talented handicapped are persons of outstanding ability or potential who are capable of high performance, despite handicaps such as visual, hearing, or orthopedic impairments; emotional disturbances; or learning disabilities. They require special educational programs beyond those normally provided by the regular school program which take both their giftedness and talent and their handicap into account.

How can someone be both handicapped and gifted and talented?

Even though this may seem like a contradiction in terms, a moment's reflection reveals that many people can be exceptional in more than one way. Some prominent examples of gifted and talented people with handicaps include humanitarian Helen Keller (blind, deaf, and mute), Leonardo da Vinci (learning disabled), Franklin D. Roosevelt (orthopedically handicapped), and rock star Stevie Wonder (blind).

Why is it necessary to provide the gifted and talented handicapped with special educational programs?

Special programs for the gifted and talented handicapped are necessary because the unique physical, intellectual, and creative needs of this group cannot be met within the context of a regular school program. Despite the lack of firm research data, an educated guess can be made that there may be close to 300,000 school age children in the United States who are both gifted and talented and handicapped in some way. Because of its high visibility, it is often the handicapping condition of these children which receives special attention while their intellectual and creative development is overlooked. Prominent gifted and talented handicapped persons, while certainly noteworthy for their achievements despite obstacles, are exceptions to the rule. When we consider that the development of gifts and talents in children is justified in its own right, it seems all the more appropriate to use that development to help overcome their disabilities in other areas.

What effect does a handicapping condition have on the development of intelligence or talent?

Because each child must be looked at as an individual, it is impossible to say conclusively what the effect of a given handicapping condition will be without a thorough assessment. Since it is more easily recognized, however, the handicapping condition often disguises a person's true abilities and potential. The disability is only one area of need and educating children with only their handicap in mind often results in inappropriate educational placement.

However, a physical handicap can often impair development in other areas because it limits access to information, resources, and opportunity. But, if specific attention is paid to the improvement of the total educational environment when handicapped people are served, negative effects can be minimized and often reversed to give positive results. If a concentrated effort is made to serve the physical, intellectual, and creative needs of these persons, a better balance between physical and mental development can be achieved. They can, in fact, complement each other.

How can the gifted and talented handicapped be identified?

The basic identification problem is removing the mask that a disability can place over intellectual ability, talent, and creativity. People with obvious handicaps, such as blindness or deafness, can be readily identified, as can those with obvious mental or creative gifts and talents. But identifying the true ability of a deaf child who has inadequate communication skills or of a physically handicapped person who cannot hold a pencil properly presents a unique problem and a challenge. Talent and ability may be present but blocked. While standardized intelligence and achievement tests are often used to help identify gifted children, such tests cannot be considered reliable in identifying the same abilities in handicapped children.

One strategy is to educate teachers, parents, and educational diagnosticians to look for potential, instead of asking

questions about demonstrated ability, use your imagination to envision what capabilities a particular child might have if that child did not have a disability.

Some special identification techniques which can be useful in identifying gifted and talented handicapped children include the following:

- *Biographical information forms.* These combine information about the child drawn from a wide variety of persons (parents, teachers, relatives, and peers) and contexts (home, school, the community, and at play).
- *Behavioral checklists.* These provide information about the ways in which handicapped children might respond to different kinds of situations, coping mechanisms they might have developed for their disabilities, and attitudinal responses they might make to their environments. Information of this kind can often be used to predict future performance.
- *Play observation records.* These can be used to gather information about behavior in less structured situations, such as peer relating abilities, leadership qualities, and creativity.
- *Peer evaluation forms.* These can be very revealing sources of information about a child since children very often see things in their friends that adults have forgotten how to look for.

What can be done to promote services for the gifted and talented handicapped?

- A major goal is to increase public awareness to the needs of the gifted and talented handicapped by bringing them to the attention of local and state education authorities, by supporting advocacy efforts in their behalf, and by learning more about them.
- Parents, teachers, and school administrators can encourage support for research in the field of gifted and talented handicapped.
- The development of special programs needs to be encouraged as do more appropriate curricula and materials.
- Advocate groups of concerned parents, educators, civic groups, and other interested persons can be formed in both the private and public sectors.
- Better methods for identifying the gifted and talented handicapped should be encouraged, including referral, diagnostic, placement, and educational evaluation strategies.

RESOURCES

For more information on the gifted and talented handicapped, write to:

The Council for Exceptional Children
1920 Association Drive
Reston, VA 22091

The Office of Gifted and Talented
US Office of Education
6th and D Streets, S.W.
Washington, D.C. 20202

National Association for Gifted Children
R.R. 5
Box 630-A
Hot Springs, AR 71901

You may also to write to the state consultant for gifted and talented education in your state's office of education. Inquiries about federally sponsored projects and programs for the gifted and talented handicapped may be obtained from the Office of Gifted and Talented, US Office of Education.

Readings in the area which may be helpful are:

Prepared by C. June Maker, University of Virginia and John Grossi, The Council for Exceptional Children.

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DEVELOPING INDIVIDUALIZED EDUCATION PROGRAMS (IEP's) FOR THE GIFTED AND TALENTED

Produced for the Office of Gifted and Talented, US Office of Education, Department of Health, Education, and Welfare by The Council for Exceptional Children.

Historically, the fact that individual children possess certain physical, emotional, and learning characteristics which distinguish them from other children has led educators to realize the importance and desirability of developing educational programs which meet the individual needs of their students. More recently, considerable legislation and litigation, at both state and federal levels, have been interpreted as establishing the need for individualized education programs (IEP's) for all children. To date, largely because of semantic restrictions in much of the current law, gifted and talented children are not usually included in most IEP mandates. Nevertheless, growing numbers of educators and policy makers at state and local levels are rapidly realizing that the unique needs of this population justify their inclusion in the development and implementation of such mandates.

What is an IEP?

An IEP is a written document, developed and revised annually in a conference involving the child's parents and teacher(s), a qualified special education representative of the education agency (other than the teacher), and where appropriate, the child. The program must be a realistic assessment of the child's present level of performance, and should present a reasonable expectation of what the child can learn over the course of one year, as well as the identification of appropriate evaluation strategies to determine the student's progress.

What should the IEP include?

A child's IEP should include at least the following:

- *A written statement of the child's present levels of educational performance.* Before an IEP planning team can determine the child's needs, a survey of all relevant formal and informal information should be made. This information can be acquired from current school files and personnel, and from people, e.g., parents, who have contact with the child in informal settings. This information will provide a more balanced picture for determining the most appropriate instructional environment for the child.
- *A statement of annual goals to be achieved by the child.* Annual goals are written statements of what the child can be expected to learn in the educational program, as well as the targets toward which the child's learning is to be directed in specific instructional areas. Identification of annual goals must begin by assessing the child's present levels of functioning to determine the content and skills which need emphasis. IEP planners for gifted and talented children should consider factors such as the areas and degree of giftedness, special abilities, learning rates, and behavioral factors. Reasonable goals for gifted and talented children should challenge their abilities without frustrating them, be broad enough to allow for unexpected gains, and enhance those that are expected.
- *Short term objectives to be realized in the achievement of each annual goal.* Short term objectives are specific units of learning which serve annual goals within instructional areas. They should be mastered in relatively short time periods, depending on learning characteristics and their specificity. Short term objectives may be derived from published curricula, collections of objectives for specific instructional areas, and from teacher written objectives. Objectives should also include a method for evaluating the child's program.
- *A statement of appropriate objectives, criteria, evaluation procedures, and schedules for determining whether the instructional objectives are being achieved.* Procedures for evaluating student mastery of objectives should be decided on by the IEP team.
- *A statement of the extent to which the student will be able to benefit from participation in a regular education program, and for what purposes.* Like other exceptional children, gifted and talented children should participate in educational programs in the least restrictive environment, in order to optimize the student's educational and social growth in consonance with his or her ability to benefit.
- *A description of all special education and related services required to meet the student's need.* Both special and related services should be stipulated in the IEP. A descrip-

tion of special requirements should include the type of classroom services (resource room, self contained class, etc.), the number of times per week the student is to be in a special setting, length of attendance, and a specific statement of what related services are to be delivered, why, by whom, and for how long.

- *The projected starting dates for, and duration of, these services.* The date for service delivery should be specified in the IEP. Actual placement occurs following the development of the IEP. Services should continue for one year and the termination date should be stated. Changes in the IEP can be made during the year and should be recorded.

These steps encompass the basics of an IEP for a gifted and talented student. Because the program is individualized, variations can and will occur within these guidelines. For more information concerning the development of IEP's for gifted and talented children, write your state department of education's consultant for gifted and talented education, or The Council for Exceptional Children, 1920 Association Drive, Reston VA 22091, 800/336-3728.

RESOURCES

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IDENTIFICATION OF THE GIFTED AND TALENTED

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Because human potential can express itself across a broad spectrum of specific abilities, and because the outer limits of potential can also be reached in this same variety of contexts, the most important question to ask when identifying the gifted and talented is "gifted at what?"

In recent years educators of the gifted and talented have spurned a generalized notion of giftedness which, historically, has concentrated on particular cognitive skills such as verbal and reasoning abilities. Instead, a concept of giftedness has been advanced which looks at specific ability areas, stressing the capability of high performance in such diverse contexts as creative and productive thinking, the visual and performing arts, leadership ability, and psychomotor ability, in addition to more traditional expressions of giftedness like general intellectual ability, or in readily measurable specific abilities such as math, physics, or chemistry.

Because identifying gifts and talents other than sheer academic ability is still a relatively unrefined diagnostic skill, some school systems continue to cling to standardized ability and aptitude tests to identify *all* kinds of gifted and talented children. Other useful methods may include: teacher nomination, parent interviews, peer nomination, autobiographical inventories, case studies, the evaluation of student products, auditions, and teacher observation checklists. Some more appropriate methods and steps are suggested below in regard to the six ability areas set forth by the US Office of Education as contexts in which giftedness or talent may emerge.

Screening for general intellectual ability

Many school systems make use of group IQ tests for their first level screening effort. Although research has shown group tests to be misleading when used as a rigid guideline, they are still one of the more effective methods of defining a group which then can be more carefully assessed on an individual basis. The Stanford-Binet Intelligence Test and The Wechsler Intelligence Scale for Children—Revised (WISC-R) are considered to be among the best instruments currently available for identifying children with high general intellectual ability on an individual basis. Additional nominations of potentially gifted youngsters should be sought from parents, peers, teachers, and librarians. Minimum IQ scores of 125 to 135 are generally required for placement in a program for the intellectually gifted. In dealing with minority, disadvantaged, and handicapped children, extreme caution is advised in relying on IQ scores since most tests have not been standardized on these populations.

Probing for creative or productive thinking

In addition to the Torrance Test of Creative Thinking, a number of nontest ways of identifying the creatively gifted have been described by E. Paul Torrance (1977). His techniques are based on the observation of children's behavior and an analysis of what they produce. Strengths in the following areas may indicate exceptional creativity:

- Ability to express feelings and emotions.
- Ability to improvise with commonplace materials and objects.
- Articulateness in role playing, sociodrama, and story telling.
- Enjoyment of and ability in visual arts, such as drawing, painting, and sculpture.
- Enjoyment of and ability in creative movement, dance, and dramatics.
- Enjoyment of and ability in instrumental and vocal music and music rhythm.
- Use of expressive speech.
- Fluency and flexibility in figural media.
- Enjoyment of and skills in group activities and problem solving.
- Responsiveness to the concrete.
- Responsiveness to the kinesthetic.
- Expressiveness of gestures and body language and the ability to interpret body language.
- Humor.
- Richness of imagery in informal language.
- Originality of ideas in problem solving.
- Problem centeredness or persistence in problem solving.

- Emotional responsiveness.
- Quickness of warm-up.

Discovering talent in visual and performing arts

The opinions of experts, peers, and parents should be solicited when identifying children with special talents. A biographical sketch by a parent can reveal a great deal about precocity in all areas of exceptional ability. Children who take lessons in dance, music, and art outside the school setting should be identified and their teachers asked to comment on the child's potential. Auditions may be conducted. Often a youngster's peers know more about a child's special talents than do the adults in the environment. Ask students to list classmates whom they would like to have help them with art projects, or to nominate classmates for a talent show. Arts specialists within the school system are also excellent resources for identifying talented youngsters.

Determining exceptional leadership ability

Within a given school or community there are *emerging* leaders as well as class presidents. Leaderships is not always channeled in socially acceptable ways. The child who "gets others in trouble" is still a leader, as are *con artists* and *hustlers*. The search for leadership potential should include community workers connected with churches, Scout troops, preschool centers, playgrounds, and recreation halls. The list should include young children who seem to be competing successfully with older children. The search should identify leaders of street gangs. Ask parents if their children take charge in their daily routines. Ask dance teachers, "Who innovates?" and "Who leads and who follows?" Observation by teachers is invaluable in identifying class and school leaders.

Determining specific academic aptitudes

While the standardized group achievement tests often used to screen for specific academic aptitudes are useful for measuring acquired knowledge, they are not designed to indicate potential. Children who are consumed by specific interests, e.g. dinosaurs, volcanoes, puzzles, or stamps, may be in the first stages of demonstrating a specific academic aptitude. Self motivation is a strong indicator of exceptional ability and early identification and nurture are essential. Parents and/or students may be asked to fill out checklists indicating how free time is spent and what specific interests are pursued.

Identifying outstanding psychomotor ability

Who is chosen first by other children as game leader? Who always seems to be on the winning team? Observe children on the playground. Ask parents about outside activities. At what age did the child ride a bicycle? Bat a ball? Does the youngster show special talent or interest in dance, gymnastics, swimming? Does he or she enter athletic competitions? Can the child fix things easily? Ask Little League coaches, athletic club directors, and dancing school teachers for nominations of the potentially gifted in psychomotor ability.

Successful procedures

A successful screening and identification program requires early identification; a continuing search; the involvement of a variety of professionals, community workers, and parents; and the use of multiple methods. Flexibility is required to discover children who are believed to have outstanding potential but who may not qualify on the basis of test scores. Some hold the mistaken belief that "talent will out." Research has shown, however, that talent and ability have a better chance of flourishing if they are identified early and nurtured consistently.

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Prepared by Jean N. Nazzaro, The Council for Exceptional Children.

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MATH AND SCIENCE FOR THE GIFTED AND TALENTED CHILD

Produced for the Office of Gifted and Talented, US Office of Education, Department of Health, Education, and Welfare by The Council for Exceptional Children.

Who are the mathematically gifted and talented?

Mathematical talent is probably best described as precocious development in both reasoning and achievement. The student who at age 12 or 13, for example, scores as well as or better than high school seniors on difficult tests of mathematical reasoning ability, such as the Scholastic Aptitude Test—Mathematics or a similar test, could best be described as gifted in that particular aptitude. A third or fourth grader who has already mastered the mathematics curriculum through the sixth grade level, and who scores very high on measures of abstract reasoning ability, may also be precocious.

Abstract reasoning ability and mathematical talent are not synonymous, however. Sometimes a good reasoner in math is not ahead in knowledge of specific mathematical concepts or computational skills. Although mathematical ability is different from verbal ability, the two are probably not totally independent. Thus, a student who is a good mathematical reasoner is likely to be above average for his/her age group on verbal reasoning tests.

Scientific talent is more difficult to describe. Some areas of science require mathematical reasoning ability, while others may require qualitative rather than quantitative skills. A precocious math student is likely to be good in quantitative science subjects such as physics or chemistry, but may show little talent or interest in biology or botany.

One indication of an aptitude for science is a strong knowledge of and interest in it. The seventh grade student who possesses a great deal of general science knowledge may be very talented in this area. If the same student is relatively better at verbal than quantitative tasks, he or she will probably be more interested and successful in the biological and descriptive sciences than in the physical sciences.

How can talented students be identified?

A great deal is known about identifying mathematically gifted students in the middle school years, less in other age groups. An initial screening can look for students in grades sixth through ninth who score at or above the 95th percentile on the mathematical concepts portion of in-grade standardized achievement tests. This should be supplemented, with teacher nominations. The initial pool of students can then be tested on a more difficult test intended for higher age groups.

Such tests as the Academic Promise Tests (APT) or the appropriate level of the School and College Abilities Test (SCAT) could also be used to identify students in the upper elementary grades. It is much more difficult to identify children below grade five because, typically, they have not yet developed their full potential beyond basic arithmetic skills. Facility at computation alone is not generally a good indication of superior mathematical reasoning ability.

Scientifically gifted secondary level students can be identified by looking at projects entered in science fairs or by screening for scores at the 95th and higher percentiles on verbal and mathematics tests at their grade level. These high scorers can then be retested on more advanced measures of science achievement such as the STEP Science Test.

Although children with IQ scores of 130 and above have often been identified for special programs in mathematics or science, it is important to remember that IQ's are generally a better indicator of learning rate than of specific aptitude; they are not synonymous with mathematical or scientific talent.

Parents and teachers should ask three questions: (1) Is the child bored by in-grade science and math material? (2) Does the child score at or above the 95th percentile on standardized tests, such as the Iowa Test of Basic Skills? and (3) Does the child seem eager to learn more and at a faster pace? If all three questions can be answered "Yes," the child should be tested to determine his or her readiness to accelerate in science and/or math.

Do girls achieve as well as boys in math and science?

More boys than girls exhibit talent and interest in math and science in the secondary school years. This appears to result, in part, from the differential encouragement of males and females, as well as from the students' own culturally conditioned perceptions of math and science as male domains, reinforced by both parents and schools. Additionally, gifted boys tend to be more career oriented than most gifted girls, although this has been changing in recent years. Girls may need special encouragement to overcome the stereotypic view that math and science are unimportant for their futures.

How can mathematic and science talents be facilitated?

Although some would argue that new or special curricula need to be developed for gifted math and science students, research does not support this view. What the gifted student needs most is to be given the opportunity to study these subjects at an appropriately fast pace, with the help of a knowledgeable and enthusiastic teacher.

College level math and/or science courses are sometimes available for 11th and 12th graders. In some areas special Advanced Placement Program (APP) courses are available. Some students may need special facilitation at younger ages when their interests and talents have begun to blossom. They may be ready to begin more abstract mathematics such as algebra and plane geometry as early as the higher elementary grades, or simply starting the traditional math or science sequence at grade six or seven may provide sufficient enrichment to meet their needs.

If a sizable number of gifted students can be identified at grades six, seven, or eight, a special enriched and accelerated math or science program can be formed for them. The key to these programs is fast pacing through the skills acquisition stage and in-depth treatment of the subject matter. Such classes need not meet daily; once a week for 2 hours is generally enough. Students selected should be highly motivated and capable of independent study.

A well trained teacher is crucial. Regrettably, many elementary school teachers lack the necessary training in math or science to work successfully with the highly gifted student. In such cases a junior or senior high school teacher, or a college student tutor, might be recruited to conduct special classes. The tutorial model should be one of diagnostic testing and prescriptive teaching, moving the student along at his or her natural learning rate.

The sequential nature of mathematics and much science makes acceleration a necessary component of gifted programs. Basic curriculum enrichment is also needed, however, and can be provided through courses in computer programing, statistics and probability, astronomy, and other areas of applied science and mathematics.

RESOURCES

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Prepared by Lynn H. Fox, The John Hopkins University, Baltimore, Maryland.

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READING FOR THE GIFTED AND TALENTED

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Most reading programs devote a great deal of time to decoding and basic comprehension skills. Because many gifted children master these skills at earlier ages, subjecting them to the regular readiness, decoding, and simple comprehension exercises of the primary grades often wastes time and frustrates the child. It would be far more valuable to move on to skills of critical reading, i.e., the development of logical thinking processes and the abilities to apply those processes to informative and literary material.

Although some researchers have listed as many as 186 individual critical reading skills, most can be grouped into six basic areas:

- Inference
- Assumption
- Deduction
- Interpretation
- Prediction
- Evaluation

Reading programs for gifted children should concentrate on these general areas. The level of sophistication on which a child can work will necessarily depend upon age, ability and experiential background. Even very young gifted children, however, will be able to perform at advanced levels, if instruction is geared toward them. The teacher must be concerned about aiding the thought processes in the child that will facilitate this development.

Commonly, gifted students are simply directed to read more books. While this "instructional strategy" may broaden their experiential background, it does not necessarily provide for needed skill development. Critical thinking and reading does not occur automatically.

The types of material used can help to vary a critical reading program. While fiction is often analyzed in the upper grades, there is a notable lack of evaluation of more expository material, such as newspapers, popular magazines, textbooks, government reports, research findings, etc. Since these materials are necessary for efficient, informed living, they should be included along with the appreciation and analysis of literature. The combination will offer the gifted child variety as well as the opportunity to transfer learned skills from one type of material to another.

The gifted child may also begin school with well developed writing skills or develop them at a much more rapid rate than their age-mates. Many of these children already have, or will quickly gain, the understanding of grammar and composition necessary to express themselves in a creative, well organized manner. On the other hand, there are also children who possess a talent for creative ideas but lack the writing skills, i.e., their verbal skills lag behind their creative abilities. Here instruction must maintain a careful balance. While the child needs to develop structure and organization, the teacher must be careful not to discourage or inhibit the child's creativity. Constant reassurance as to the worth of the child's ideas, as well as reinforcement of basic language skills become the primary goals for teachers of gifted children whose abilities are unevenly developed.

It is often assumed, mistakenly, that *all* gifted students should be developing these creative writing techniques. While these may be valuable and relevant for some children, others will find a far greater need to develop their ability in expository writing and research skills. Creative works can bring a great deal of personal satisfaction, but skill development for written reports and research studies is also vital. Since many gifted programs are based on independent study, a weakness in this area of writing could cause failure in such a program. Teachers must, therefore, look at each individual child's talents, interests and plans before arbitrarily assigning one writing program for all.

Instruction and related projects in journalism, advertising and other topics of student interests can integrate all of the language arts with critical reading skills, yet still provide ample opportunity for creative expression. An integrated language arts program that stresses the application of many writing skills to numerous content areas is recommended.

RESOURCES

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WHAT IS CREATIVITY?

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It has been said that the ordinary man looks at the world and sees what everyone else sees, but the creative man looks at the world and thinks what no one else has thought. A fairly good thumbnail definition of creativity, then, is that it is the process of combining what exists into something new, whether in the form of an idea, a procedure, or a product.

Some people are better at doing this than others, and this ability manifests itself in children as well as adults. Each of us has had what might be called an "Aha!" experience, and all of us can learn to foster our creativity by developing the necessary abilities, if we better understand the process of creative thinking.

What is creative thinking?

The creative process can be understood best by looking at the stages involved in finding a creative solution to a particular problem. Although experts have differing ways of explaining exactly what happens, most agree that a four stage process takes place.

The first stage may be called the *definition* of the problem. Many refer to it as "statement" or "fact finding." But the basic idea is to gather together as much information as possible about the problem—its extent, nature, and qualities. Most important to this stage is to keep an open mind, to state the problem in as many different ways as possible, and to have as much information as is available. The search for facts and information may, however, become so self perpetuating that it never ends. It is necessary, at some point, to call a halt, usually when one feels that further defining activity has reached the level of diminishing returns.

After the problem has been defined, the second stage of *brainstorming*, or idea finding begins. Here problem solvers engage in free association techniques of various kinds to jolt their minds out of conventional tracks and into unconventional areas. Word play, extravagant wishes, scenarios, and way out ideas are all actively encouraged. During this phase it is crucial that all ideas be accepted, and that the quality of ideas not be judged. The emphasis is on quantity, not quality. Something that seems silly may trigger a solution from another quarter.

The next stage in the process is the most mysterious and ill-defined. Although this stage is not well understood, most experts agree it is crucial to creative problem solving. It can be described as a *pause*, or as some call it, a fallow period in which the previous activities of definition and brainstorming are allowed to cook. Sometimes it is helpful to leave the problem solving altogether and turn attention to an unrelated activity. Many creative problem solving techniques have this down time as a formally structured component. The result is often that a solution leaps unbidden to the consciousness, almost as a bolt from the blue. This result is well documented in the writings of creative individuals.

Solution finding is the final stage, and it frequently receives less than its fair share of attention. It is a dependent activity which requires accurate definitions, brainstorming, a creative pause, and the selection of the best alternative for implementing a solution. During the idea finding stage, it is best to suspend judgment about the ideas generated; during this stage, alternatives must be evaluated according to carefully chosen criteria.

When using creative problem solving processes it is very important to remember that idea finding and solution finding are distinct and separate stages. Deferring judgment until the final stage will encourage the development of more and better ideas.

What abilities are necessary to be creative?

There are four basic abilities necessary to creativity and problem solving operations: fluency, flexibility, originality, and elaboration.

Fluency is part of the information retrieval process. A person gathers information and stores it until needed in the mind. The ability to retrieve it quickly and in quantity is called fluency, which is generally measured by the number of different ideas an individual generates in response to a specific problem. A student may be asked, for example, to list all the possible uses for a brick. If the student lists: "paperweight, anchor, doorstop, breaking a window, crushing nuts," and so on for several more ideas, the student is demonstrating fluency. This trait may also be observed in class discussions

when a student offers many ideas on one topic, or generates several ways to implement an idea.

Flexibility is the ability to switch from one *kind* of thought to another. In problem solving and other creative activities people must be able to generate a variety of applications of a particular principle or concept. In the above example, the possibilities cited for using the brick demonstrate flexibility, since both the weight of the brick (as an anchor or doorstop) and its potential as an implement of destruction (breaking windows) were considered. If the list should include "build a house" and "make bookshelves," other properties of the brick would be brought into play and, hence, other kinds of uses. Flexibility, then, is the ability to transcend the boundaries of a given context when solving problems. It can be demonstrated in the classroom when a student switches easily from one topic to another, or generates several different kinds of alternatives in problem solving situations.

Originality, often assumed to be the same as creativity, is really the ability to come up with unique or unusual ideas, concepts, or alternatives. To continue our example for a moment, using a brick to build buildings is not very original; however, using it as a pencil holder or grinding it up to use the dust as a bird cage liner are unusual responses.

Elaboration is the ability to embellish and/or complete an idea. The student who suggests using a brick as a pencil holder may demonstrate elaborative thinking by covering the bottom with felt, painting the brick, modifying the sizes of the holes in the brick to accommodate different sizes of pencils.

Prepared by Penny Saletta, DHEW Region IX.

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DEVELOPING A COMMUNITY BASED MENTORSHIP PROGRAM FOR THE GIFTED AND TALENTED

Produced for the Office of Gifted and Talented, US Office of Education, Department of Health, Education, and Welfare by The Council for Exceptional Children.

What is a mentor?

A mentor is one who already stands within the context of a particular tradition, discipline, profession, or craft and who serves as an advisor, guide, teacher, and role model to those who seek access to the mentor's world and skills.

What characteristics should a mentor have?

There are no set rules, especially since the mentorship plays such a highly individualized educational role. In general, however, the mentor:

- Is usually but not always an adult.
- Has a special skill, interest, or activity which engages the learner's interest.
- Is able to guide the learner toward personally rewarding experiences where challenges can be met, skills developed, problems solved, and relationships established.
- Is flexible, helping the learner review and revise activities and, when necessary, goals.
- Is often a role model for the learner. The mentor can impart an understanding of life style and attitudes different from those the student might ordinarily meet.
- Is, above all, interested in the student as a learner and as an individual.

Why are mentors good people to work with gifted and talented students?

Mentors are particularly valuable to the development of the gifted and talented student because they provide models of competency, exploration, commitment to a field or discipline, and caring. Mentors can be found in all occupations and endeavors.

How can mentors be identified?

As a first step, those developing community based mentorship programs should conduct a critical assessment of both their program's goals and the resources of the community in which it will operate. Community agencies, e.g., governmental, educational, and service, are usually excellent places to start. These agencies often compile lists of individuals who act as resources in their particular occupational areas. Many of these people are delighted to serve as mentors to gifted and talented students who express similar interests. Labor, business, industrial, and professional groups can be approached as well as individual artists, doctors, lawyers, and craftsmen.

Are mentorship programs good for all gifted and talented students?

No. Mentorships are usually inappropriate for elementary school age students. Secondary students who are beginning to explore vocational and career interests or who have consuming hobbies are often good candidates for mentorship programs. Candidates should be sufficiently mature to be able to benefit from a one to one relationship with an adult, be able to take both guidance and criticism well, and should show evidence of ability in independent study situations.

What is required of those involved in mentorships?

The most important quality of mentorship is a shared understanding of the tasks, responsibilities, and functions to be performed by both the mentor and student. This requirement is best met through a careful matching of student and mentor by the program coordinator, director, or liaison person.

What is the role of the director of the program?

The most effective director or intermediary is one familiar with the community, its institutions, and its human resources. The intermediary should conduct interviews to ascertain students' goals and interests and to help students clearly define their objectives in becoming involved with a mentor. The intermediary will also interview prospective mentors, assessing not only their ability to relate to young people but also their goals for the mentorship, to narrow the range of possible placements. The major purpose of both sets of interviews is to clarify expectations. The intermediary will then combine objective data, such as learner interests and abilities, schedule and transportation problems, and mentor skills and

resources, with subjective factors, such as personality traits. Placement can then be proposed.

How do I start a mentorship program for gifted and talented students?

There is no ideal formula. To a large extent, the nature of the community and the resources within it will determine how a given program will be developed. However diverse, all mentorship programs should provide opportunities for gifted and talented students to:

- Pursue their interest at an appropriate level of difficulty.
- Explore career options through the real world of work experiences.
- Determine which of many talents and abilities holds the most promise for developing a career or life interest.
- Interact with other highly talented peers and adults.

To gather support for these goals, you may want to speak to community groups, parents, school personnel, and likely sources for mentors. Inform them that mentorship services need not be secured through a programmatic approach but can be established on an individual basis. When gathering support, it is important to remember that:

- A mentorship program can help bring the school and the community together.
- Student work habits will be developed and strengthened.
- The innovative nature of the program can be used to generate educator interest.
- The program is not unstructured rather it seeks to restructure the educational context.
- The program will be carefully evaluated.

What features of community based mentorship programs make them attractive?

- Gifted and talented students often need a latitude and depth of involvement that is not always available within the framework of the normal classroom.
- Gifted and talented students need settings where their curiosity can thrive among adults who can respond to it wholeheartedly.
- Gifted and talented students need to test the limits of their understanding, skills, and expression in the real world and to have the opportunity to create, examine, and test the products of their special vision with adults who can challenge them.
- Gifted and talented students of ethnic and racial minorities and lower socioeconomic environments often go unrecognized because the schools to which they are assigned lack appropriate resources.

How do I evaluate a community based mentorship program?

Like all educational programs, community based mentorship programs should be evaluated for their effectiveness and for the sake of improving them. Planning for evaluation of the program should begin at the same time as planning for the program itself. Evaluation as an afterthought is usually too little and too late and seldom provides the opportunity to make timely adjustment during the course of a program's life. If you are unfamiliar with how to approach an evaluation, the basic resources by Worthen and Saunders (1972) or Renzulli (1975) provide a survey of basic evaluation principles.

RESOURCES

For more information on community based mentorship programs write to your state education agency's consultant for gifted and talented programs or to:

The Council for Exceptional Children
1920 Association Drive
Reston, VA 22091

Readings in the area which may be helpful are:

Campbell, F. P., Dunette, M. D., Lawler, E. E., & Weick, K. E. *Managerial behavior, performance and effectiveness.* New York: McGraw Hill, 1970.

National Commission on Resources For Youth. *In-service training manual for developing community based mentorships for gifted and talented.* Unpublished manuscript, 1977. *

Renzulli, Joseph. *A guidebook for evaluating programs for the gifted and talented.* Ventura, CA: Office of the Ventura County Superintendent of Schools, 1975.

Worthen, B., & Saunders, J. *Educational evaluation: Theory and practice.* Worthington, OH: Charles A. Jones, 1972.

Prepared by Bruce Boston, Fairfax, Virginia.

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CREATIVE THINKING TECHNIQUES

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Creativity can be fostered in connection with subject oriented curriculum, can be linked to higher levels of thinking skills, and can be the basis for both inquiry and critical thinking activities.

It is helpful to remember, however, that creativity is a form of divergent thinking, i.e., creative thought does not necessarily "fit" into set patterns and does not necessarily generate "correct" answers. The very nature of creativity demands fluency and flexibility in processes which require a nonrestrictive, accepting, and open ended atmosphere to flourish. See the fact sheet "What Is Creativity?" for a brief discussion of these terms.

There are four basic rules that apply to most activities designed to encourage creative thinking:

- *Defer judgment.* When generating ideas or problem solving, it is inhibiting both to students and to the process itself to impose evaluative or negative judgments on any given idea. Evaluation comes later, when it is necessary to choose among several alternatives in order to actually solve the problem, or to verify the acceptability of an alternative which has been implemented in a solution strategy.
- *Generate many ideas for any given situation, both in number (fluency) and in kind (flexibility).* The more ideas generated, the larger the base for finding the best solution strategy. In this stage of creative thinking, quantity surpasses quality.
- *Solicit free thinking.* Unusual ideas bizarre notions, and outlandish scenarios are acceptable and welcome. Any idea that seems implausible may spark a workable one, or one that can be modified into a solution or strategy. Originality and elaboration often surface here as integral components of the creative process.
- *Combine ideas.* When experiencing a creative thinking activity, it is not unusual for one idea to spawn another; group work often excites such combinations. By joining unlikely ideas, utterly new and original solutions can be brought into being.

These four general rules apply to all idea generating and creative thinking activities. Evaluation, verification, and implementation occur once a substantial idea pool has been established. There are a variety of techniques and methods which have been published and practiced in both education and industry to enhance creative thinking abilities. Some of these are described below. Others may be found among the resources listed at the end of the fact sheet.

Creative thinking exercises

BRAINSTORMING: Generating ideas and alternatives to a situation. An example is: "Think of all the uses for a tin can, a screwdriver, or an acorn." Another example is the "just suppose activity": "Just suppose all the rivers became salty. What would happen?"

ATTRIBUTE LISTING: Given a problem, list all its components or elements in one column. List all the attributes or characteristics of each component in a second column. Generate ideas for improvement in a third, and positive and negative features in a fourth. The problem should be stated in how to fashion: "How to improve the playground":

ELEMENT	ATTRIBUTE	IDEAS FOR IMPROVEMENT	POSITIVE FEATURES	NEGATIVE FEATURES
1. Swings	Too high	Lower them	Small kids can swing easier	If too low, little kids could get hurt
2. Ground	Blacktop	Soften with mats, artificial turf	Increases # of games playable	-Cost -Effect of weather on mats

On this model, each positive and negative feature can then be translated into a new element of the problem to be run through the entire process again, making the creative activity self perpetuating.

MORPHOLOGICAL ANALYSIS (Checkerboard): Given a problem, make a grid. List the elements of the problem across the top and attributes down the side. Force combinations to fill in the squares of the grid. Example: Invent a new type of candy.

	CHEWY	HARD	GUM
Nut	Cashew Toffee	Walnut Lifesaver	Peanut butter Chewing gum
Fruit	Apple Taffy	Peach Lifesaver	Mango Chewing gum

SYNECTICS: Given a problem, use analogies and opposites to associate comparable responses. Then force fit generated responses into realistic solution/strategies. The most common types of analogies are fantasy, direct parallel/opposite, and personal. Example: How to move heavy objects in a factory.

- *ANALOGY #1—Fantasy:* Use levitation to move the objects. *Force Fit:* Use air currents to levitate the objects.
- *ANALOGY #2—Direct Parallel:* What natural forces move heavy objects? *Brainstorm:* earthquakes, floods, geothermal pressure. *Force Fit:* Use geothermal geysers to power flotation devices to move the objects.
- *ANALOGY #3—Personal:* How would I like to be moved if I were a heavy object? *Brainstorm:* on a soft cloud, on a mattress, on a waterbed *Force Fit:* On a foam covered conveyor belt.

RESOURCES

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Davis, G. A. & Scott, J. A. *Training creative thinking.* New York: Holt, Rinehart, and Winston, 1971.

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Prepared by Penny Saletta, DHEW Region IX.

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